

REMARKS

Claims 17-59 and 61-74 are pending. Claims 17-59 were withdrawn from consideration. Claims 61-74 are amended herein. Support for the amendments is set forth below.

Applicants' Response to the Rejections under 35 U.S.C. §112

Claim 74 has been rejected under 35 U.S.C. §112 for utilizing the term –percentage- instead of “precharge.” Applicants have corrected this typographical error herein by amending claim 74 by replacing –percentage- with “precharge.” In light of the amendment, applicants respectfully request the rejection be withdrawn.

Applicants' Response to the Rejections under 35 U.S.C. §103(a)

Currently, claims 61-71 stand rejected under 35 U.S.C. §103(a) as being unpatentable over cited prior art. In response thereto, applicants have amended the claims to more distinctly claim the subject matter regarded as the invention.

Claim 64

Claim 64 is rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,665,968 to Meisburger et al. in view of U.S. Patent No. 5,973,323 to Adler et al., U.S. Patent No. 4,137,476 to Ishii et al., and U.S. Patent 6, 765,217 to Nishimura et al. In response thereto, applicant has amended claim 64 to include the features of: a holder within the working chamber which holds the object in such a manner as to guarantee accurate alignment (support for this amendment is located at page 77, line 19 to page 78, line 14); and, a carrying mechanism for securely accommodating the object to be inspected and for transferring the object to or from the

working chamber, the carrying mechanism has a mini-environment chamber with cleaning filter, a pre-aligner and a suction duct(support for this amendment is located at page 71, lines 2-27).

Applicants respectfully submit that these limitations are not taught or suggested by the prior art.

The present invention pursuant to the amendments has two requirements in the inspection apparatus; namely, pre-alignment of the object in the waiting time to conduct precise alignment quickly in the working chamber, and waiting in a clean space, i.e. mini-environment chamber. Accordingly, applicants respectfully submit that one of ordinary skill in the art would not find the invention of amended claim 64 (and independent claims 61, 66 and 67 discussed below) obvious within the meaning of §103 based on the cited prior art.

The present invention includes not only a mini-environment chamber for storing the object in a clean space while in waiting condition but also a pre-aligner for aligning the orientation of the object within a horizontal plane, or the orientation about the axis of the object, for rough alignment is utilized. By rough aligning the object while the object is waiting in the mini-environment chamber, it is possible to reduce the time to precisely align the object within the working chamber, and thereby improve the throughput of the inspection operation.

The cited prior art does not teach or suggest these limitations. Tabrizi discloses a mini-environment chamber. However, it does not teach or suggest prealigning the object in preparation step before the process conducted in the work chamber, or the idea of aligning the object in two steps before inspection. Neither Meisburger, nor any other cited references, disclose or suggest the mini-environment chamber as set forth in Claim 64 and the other independent claims 61, 66 and 67. Wherefore, in light of the amendments, favorable reconsideration is requested.

Claims 65 and 66

Claims 65 and 66 are rejected under 35 U.S.C. §103(a) as being unpatentable over cited art as applied to claim 64 above, and further in view of U.S. Patent No. 5,944,049 to Beyer et al. In regard to claim 65, in addition to the amendments to parent claim 64, applicants have also added the feature that an electrode is located between the object to be inspected and the objective lens so as to control the electric field between the object and the lens (support for this amendment is found at page 1, lines 18-22 and page 113, lines 5-13).

Applicants respectfully submit that this feature distinguishes claim 65 from the cited references by defining the combination of a projection type electron beam inspection apparatus and an electrode for controlling the electric field between the object and the objective lens.

In a projection type electron beam inspection apparatus, an electron beam is irradiated at a relatively wide area of the object compared with a SEM type apparatus. There is thus a problem that electric charge tends to accumulate on the object and a discharge can easily result. In addition, the discharge varies depending on the surface condition of the object. Accordingly, considering the variety of the surface condition of the object, by providing an electrode which can control the electric field between the object and the objective lens it is possible to effectively prevent the discharge in the apparatus of the present invention. This is not disclosed in the prior art.

Meisburger discloses a SEM type inspection apparatus which includes an electrode *near* the sample. However, in Meisburger, the electrode is provided for classifying an energy, not for preventing an electric discharge. It should be noted that an electric discharge can hardly occur in SEM systems. Accordingly, the purpose of providing the electrode in Meisburger is completely

different from that of the invention. Further, Neisburger does not teach or suggest the idea of changing electric field depending on the surface condition of the object. Thus applicants respectfully submit that one of ordinary skill in the art would not be motivated to combine the prior art to result in the present invention where an electrode is provided to prevent electric discharge and to control the electric field of the surface of the object.

Claim 66 has been amended to include the holder and carrying mechanism similar to claim 64, discussed above. Wherefore, applicants respectfully submit that not all the limitations of the amended claims are disclosed in the cited prior art. Favorable reconsideration is respectfully requested.

Claims 61 and 62

Claims 61 and 62 are rejected under 35 U.S.C. §103(a) as being unpatentable over cited art as applied to claim 64 above, and further in view of U.S. Patent No. 6,315,512 to Tabrizi et al. and U.S. Patent No. 5,536,128 to Shimoyashiro et al. In response thereto, applicants have amended the claims to more distinctly claim the subject matter regarded as the invention.

Specifically, applicants have amended claim 61 similar to claim 64 to include both a holder and an environment chamber which both keeps an object accurately aligned with pre-alignment in the chamber and clean. Support for the amendment is as set forth above. In regard to claim 62, in addition to the claim's dependency on amended claim 61, applicants have also amended the claim in the manner of claim 65 discussed above. Wherefore, in light of these amendments, favorable reconsideration is requested.

Claims 63, 67, and 71

Claims 63, 67, and 71 are rejected under 35 U.S.C. §103(a) as being unpatentable over cited art as applied to claims 61 and 62 above, and further in view of Beyer et al. as applied to claims 65 and 66 above. In response thereto, applicants have amended the claims to more distinctly claim the subject matter regarded as the invention. Specifically, claims 63 and 71 have been amended in a manner identical to claim 65 discussed above. Applicants respectfully submit, that in addition to the amendments to claim 63's and claim 71's respective base claims, the claims are distinguished for the reasons set forth above in respect of claim 65. Namely, none of the cited prior art discloses an electrode located between the object to be inspected and the objective lens so as to control the electric field between the object and the lens as asserted in regard to claim 65.

In regard to claim 67, applicants have amended the claim in a manner identical to claim 64, discussed above. Also as discussed above, applicants respectfully submit that none of the cited prior art teach or suggest the substance of these amendment.

Claim 68

Claim 68 is rejected under 35 U.S.C. §103(a) as being unpatentable over cited art as applied to claims 63, 67, and 71 above, and further in view of U.S. Patent No. 4,911,103 to Davis et al. In response thereto, applicants have amended the claim to more distinctly claim the subject matter regarded as the invention. Specifically, claim 68 has been amended in a manner identical to claim 65 discussed above. Applicants respectfully submit, that in addition to the amendments to claim 68's base claim 67, also discussed above, the claim is distinguished for the reasons set forth in respect of claim 65. Namely, none of the cited prior art discloses an electrode located

between the object to be inspected and the objective lens so as to control the electric field between the object and the lens as asserted in regard to claim 65.

Claim 69

Claim 69 is rejected under 35 U.S.C. §103(a) as being unpatentable over cited art as applied to claims 63, 67, and 71 above, and further in view of U.S. Patent No., 6,344,750 to Lo et al. In response thereto, applicants have amended the claim to more distinctly claim the subject matter regarded as the invention. Specifically, applicants have included the requirement that the precharge unit comprises a UV lamp coated with a photoelectron emission material for emitting a photoelectron the energy thereof being 0eV – 10eV. Applicants respectfully submit that none of the cited prior art teaches or suggests this limitation.

Claim 70

Claim 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over cited art applied to claims 63, 67 and 71 above and further in view of U.S. Patent to Petric and U.S. Patent. to Bisschops et al. In response thereto, applicants have amended the claim to more distinctly claim the subject matter regarded as the invention. Specifically, claim 70 has been amended in a manner identical to claim 65 discussed above. Applicants respectfully submit, that in addition to the amendments to claim 70's base claim 67, also discussed above, the claim is distinguished for the reasons set forth in respect of claim 65. Namely, none of the cited prior art discloses an electrode located between the object to be inspected and the objective lens so as to control the electric field between the object and the lens as asserted in regard to claim 65.

Claim 72

Claim 72 is rejected under 35 U.S.C. 103(a) as being unpatentable over cited art applied to claims 61 and 62 above and further in view of U.S. Patent No. 5,892,224 to Nakasuji. In response thereto, applicants have amended the claim to more distinctly claim the subject matter regarded as the invention. Specifically, claim 72 has been amended in a manner identical to claim 65 discussed above. Applicants respectfully submit, that in addition to the amendments to claim 72's base claim 61, also discussed above, the claim is distinguished for the reasons set forth in respect of claim 65. Namely, none of the cited prior art discloses an electrode located between the object to be inspected and the objective lens so as to control the electric field between the object and the lens as asserted in regard to claim 65.

Claims 73 and 74

Claims 73 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over cited art applied to claims 61 and 62 above and further in view of Lo et al. as applied to claim 69. In response thereto, applicants have amended the claims to more distinctly claim the subject matter regarded as the invention. Specifically, claims 73 and 74 have been amended in a manner identical to claim 65 discussed above. Applicants respectfully submit, that in addition to the amendments to claim 73's and claim 74's respective base claim 61, the claims are distinguished for the reasons set forth above in respect of claim 65. Namely, none of the cited prior art discloses an electrode located between the object to be inspected and the objective lens so as to control the electric field between the object and the lens as asserted in regard to claim 65.

Response After Final
Serial No. 09/891,511

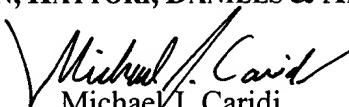
In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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